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The presence of shadow forms in which the cell wall only is stained indicates that the cell contents are either so changed as to be incapable of taking the stain or have escaped from within the wall.

The presence of soluble proteid substances (as shown by their precipitation with acetic acid) in the surrounding liquid indicates that the contents have escaped from within the cell.

Hence it would seem that autolysis of the gonococcus is effected by rupture of the cell wall and escape of the contents.

The products of this autolytic process markedly inhibit the growth of the gonococcus on artificial culture media. Their use in combating the disease in man will form the subject of a future communication.

A Case of Non-inheritance of Fluctuating Variations among the Bacteria: C.-E. A. WINSLOW and L. T. WALKER, Massachusetts Institute of Technology, Boston, Mass.

Aside from its practical importance, the study of variation among the bacteria promises to throw important light upon some of the fundamental biological problems of heredity and evolution. It is important to distinguish two types of possible variations, those which arise entirely from causes operating within the bacterial cell (either mutations or fluctuating variations), and those which are apparently due to the direct or selective effect of the environment. Goodman¹ has recently demonstrated that by selection of variations of the latter sort the acid production of certain members of the diphtheria group of bacilli may be profoundly modified. In the present investigation the authors have attempted to study the inheritance of fluctuating variations in the paratyphoid group, without special selective action. Cultures of Schottmüller's types A and B were plated out and one hundred subcultures of each were inoculated on agar from separate colonies. A dextrose broth tube was inoculated from each streak. The acidities produced were determined by titrating and the results, when plotted, showed two distinct but overlapping curves of frequency with means at 1.4 for type A and 1.6 for type B. The agar streaks of the four extreme cultures (1.1 and 1.6 for type A, 1.4 and 1.8 for type B), were then plated and a series of one hundred streaks made from each. The new curves of frequency for these descendants reverted completely to the original

means of types A and B, showing no inherited effect of the variations exhibited by their more immediate ancestors.

Bacteriology as an Important Non-technical Study: H. W. HILL, M.D., University of Minnesota, Minneapolis, Minn.

Bacteriology is now chiefly taught as an art, of use in some branch of science or industry, and almost wholly for its applications in these. Bacteriology is seldom studied for itself *alone*. But it presents many most important biological lessons, as suitable for the illustration of biological truths as any other biological study now taught; and from the control of conditions possible, some phases of biology can be illustrated best by bacteriology. For sociology, bacteriology permits, as no other biological study does, the appreciation not only of the unit, but of the interrelations of units—and hence furnishes a biological study closely paralleling sociology itself. (As a weapon in the hands of a sociologist dealing with hygienic problems it is of course practically a necessity.) Apart from its academic values its chief practical significance to the non-technical citizen consists in the training it gives concerning the *nature, distribution and life history* of bacteria and in its *technique*, which teaches the fundamentals of *personal and family* defense against disease, as distinguished from the measures of public health or state medicine. For these reasons bacteriology should be taught in the public schools, since diffusion of its teachings through the citizens in general can not be obtained in any other way.

NORMAN MACL. HARRIS,
Secretary

UNIVERSITY OF CHICAGO

SOCIETIES AND ACADEMIES

THE SOCIETY FOR EXPERIMENTAL BIOLOGY AND MEDICINE

THE thirty-third meeting of the society was held at Cornell University Medical College, April 21, 1909, with President Lee in the chair.

Members present: Atkinson, Auer, Burton-Opitz, Elser, Ewing, Flexner, Famulener, Gies, Janeway, Joseph, Kast, Lee, Lamar, Lewis, Lusk, Mandel (J. A.), Meltzer, Meyer, Morse, Noguchi, Norris, Oertel, Park, Pearce, Shaffer, Storey, Terry, Wallace, Wolf.

Members elected: John L. Todd, Peyton Rous, H. S. Jennings, Andrew Hunter, Charles R. Stockard, E. E. Southard, William W. Hale.

¹*Journal of Infectious Diseases*, V., 421.

Scientific Program

R. Burton-Opitz: The vascularity of the spleen as influenced by single nerves of the plexus lienalis.

Richard M. Pearce: An experimental study of the influence of kidney extracts and of the serum of animals with renal lesions upon the blood pressure.

J. J. R. Macleod: Further observations on the effect of asphyxia and curare on the reducing power of the blood after section of the hepatic nerves in dogs.

William H. Park and Eugene Famulener: Toxin-antitoxin mixtures as immunizing agents.

Alfred F. Hess: Antiperistalsis in its relation to tubercle bacilli and other bacteria in the alimentary tract.

Simon Flexner and Richard V. Lamar: The action of soaps on the pneumococcus.

A. O. Shaklee and S. J. Meltzer: The influence of shaking upon trypsin and rennin and a comparison of this influence with that upon pepsin.

Don R. Joseph and S. J. Meltzer: The influence of sodium and calcium upon direct and indirect muscle irritability and their mutual antagonistic actions.

J. Auer and S. J. Meltzer: The effects of local application of chloride and sulphate of magnesium upon the centers in the medulla compared with those of sodium chloride.

J. Auer and S. J. Meltzer: Respiration by continuous intrapulmonary pressure without the aid of muscular action.

Alexis Carrel: Note on the production of kidney insufficiency by reduction of the arterial circulation of the kidney.

Theodore C. Janeway: A modification of the Riva-Rocci method of determining blood-pressure for use on the dog.

Theodore C. Janeway: Note on the blood-pressure changes following reduction of the renal arterial circulation.

H. C. Thacher: The effect of experimental acute insufficiency of the right heart upon the volume of the organs.

THE thirty-fourth meeting of the society was held at the Rockefeller Institute for Medical Research, May 26, 1909, with President Lee in the chair.

Members present: Auer, Beebe, Ewing, Famulener, Flexner, Gies, Hatcher, Joseph, Lee, Lewis, Loeb (Leo), Morse, Meyer (Gustave), Pearce,

Shaffer, Sherman, Terry, Van Slyke, Wallace, Weil, Wolf.

Members elected: C. W. Edmunds, J. W. Draper Maury, Adolph Meyer.

By-law Adopted: One of the regular meetings may be held annually outside of Greater New York.

Scientific Program

H. Gideon Wells and Harry J. Corper: Observations on uricolysis, with particular reference to the "uric acid infarcts" in the kidneys of the new born.

L. L. Woodruff: Further studies on the life cycle of paramecium.

W. O. Emery and William Salant: On the decomposition of caffeine in the liver.

William Salant: The comparative toxicity of ethyl and amyl alcohol and their effect on blood pressure.

L. B. Stookey: Pentosuria.

Elizabeth Cooke and Leo Loeb: The comparative toxicity of sodium chloride and of fluorescent staining solutions upon the embryos of *Fundulus*.

M. S. Fleisher and Leo Loeb: The influence of calcium chloride and of adrenalin upon the secretion of urine and upon resorption from the peritoneal cavity.

Benjamin T. Terry: Immunity to various species of trypanosomes induced in mice by the cure of experimental infections.

D. D. Van Slyke and P. A. Levene: On the leucin fraction in casein and edestin.

D. D. Van Slyke: On "Clarín," Vahlen's active principle of ergot.

Daniel R. Lucas (by invitation): Some effects of sodium benzoate.

Matthew Steel (by invitation): An improvement of the Folin method for the determination of urinary nitrogen.

P. A. Levene and W. A. Jacobs: On nucleic acids.

Gustave M. Meyer and P. A. Levene: On the behavior of amino acids and glycyl-glycine and its anhydride in the organism of the dog.

I. Levin, D. Manson and P. A. Levene: On nitrogenous metabolism in dogs with gastro-enterostomy.

R. M. Pearce: The depression substance of dog's urine; its disappearance in experimental acute nephritis.

Philip A. Shaffer: Observations on the metabolism in a subject of diabetes.

EUGENE L. OPIE,
Secretary